PATENT
Application # 10/003,636
Attorney Docket # 2001-0163A (1014-150)

AMENDMENTS

AMENDMENTS TO THE CLAIMS

1 – 8. (Canceled)

9. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including allowing a soft partition among voice and data in which data is allowed to utilize unused bandwidth in voice interval with lower priority.

10. (Canceled)

11. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth; and

further including placing a request interval, management interval and voice ~~UGs~~ unsolicited grants adjacent to each other at one end of the map interval so that a single contiguous interval is available for data+signaling, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single

hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval.

12. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth; and

further including placing a request+management interval and voice ~~UGs~~ unsolicited grants on opposite ends of the map interval so that a single contiguous interval is available for data+signaling, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval.

13. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth;

further including placing voice unsolicited grants (UGs) contiguously within the voice interval~~; and~~

~~further including removing a UG from the contiguous UGs,~~ a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the

data+signaling interval.

14. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth;

further including placing voice unsolicited grants (UGs) contiguously within the voice interval;

~~further including removing a UG from the contiguous UGs; and~~

~~further including rearranging the UGs so as to close a hole that has been created due to a departure of a voice call and its associated UG~~, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval.

15. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth;

further including placing voice unsolicited grants (UGs) contiguously within the voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval;

~~further including removing a UG from the contiguous UGs;~~

~~further including rearranging the UGs so as to close a hole that has been created due to a departure of a voice call and its associated UG; and~~

~~further including filling the hole with data packets associated with one or more of request, management, signaling and data packets or a future UG from a future voice call.~~

16. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth; and

further including placing ~~UGs~~ unsolicited grants within the voice interval until a predetermined fraction of total bandwidth available for voice, data, and signaling is reached, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval.

17. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including maximizing contiguousness of the data+signaling interval.

18. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including assigning a higher priority to signaling packets than data packets within the data+signaling interval.

19. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval;

further including assigning a higher priority to signaling packets than data packets within the data+signaling interval; and

further including assigning unique ~~SIDs~~ service flow identifications to each signaling and data stream.

20. (Currently Amended) A method for sharing channel bandwidth, comprising:

generating a map interval defining channel transmissions for a period of time;

flexibly partitioning the map interval into a request interval, a management interval, a data+signaling interval, and a voice interval so as to optimize use of the channel bandwidth, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including generating a secondary request interval within the map interval if bandwidth is available.

21. - 24. (Canceled)

25. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon bandwidth requirements of the sub intervals;

further including partitioning the map intervals into at least a request interval, a management interval, a data+signaling interval, and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval;

further including placing the management interval and the request interval together to form a contiguous interval;

~~placing unsolicited grants (UGs) contiguously within the voice interval; and~~

~~further including moving UGs to maintain a contiguous UG interval after removal of a respective UG associated with a terminated voice call~~.

26. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon bandwidth requirements of the sub intervals;

further including partitioning the map intervals into at least a request interval, a management interval, a data+signaling interval, and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval;

further including placing the management interval and the request interval together to form a contiguous interval;

~~placing unsolicited grants (UGs) contiguously within the voice interval; and~~

~~further including filling a hole in the voice interval due to a terminated voice call with one or more packets associated with management, request, data, and signaling~~.

27. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon

bandwidth requirements of the sub intervals, the sub intervals comprising at least a data+signaling interval and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further placing ~~UGs~~ unsolicited grants within the voice interval up to a predetermined maximum bandwidth.

28. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon bandwidth requirements of the sub intervals, the sub intervals comprising at least a data+signaling interval and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including minimizing fragmentation of the data+signaling interval.

29. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon

bandwidth requirements of the sub intervals, said subintervals comprising a data+signaling interval and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including assigning separate ~~SIDs~~ service flow identifications to data and signaling streams.

30. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon bandwidth requirements of the sub intervals, said subintervals comprising a data+signaling interval and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including assigning a higher priority to signaling packets than data packets.

31. (Currently Amended) A method for sharing upstream channel bandwidth in a Data Over Cable Service Interface Specification (DOCSIS) system, comprising:

transmitting map intervals from a cable modem termination system on a downstream channel to a plurality of cable modems, wherein the map intervals define upstream traffic for the plurality of cable modems for a period of time in the future; and

flexibly partitioning the map intervals into a plurality of sub intervals based upon bandwidth requirements of the sub intervals, said subintervals comprising a data+signaling interval and a voice interval, a plurality of unsolicited grants for said voice interval packed away from the data+signaling interval in order to form a single hole adjoining the data+signaling interval, wherein when a voice call termination leaves a gap among the plurality of unsolicited grants, the gap is closed by a movement of one or more of the plurality of unsolicited grants away from the data+signaling interval; and

further including forming a further request interval when bandwidth is available.